



Europäisches Patentamt
 European Patent Office
 Office européen des brevets



(11) **EP 1 098 059 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
09.05.2001 Bulletin 2001/19

(51) Int. Cl.⁷: **E05F 15/14, E06B 11/04**

(21) Application number: **00203759.6**

(22) Date of filing: **30.10.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
 MC NL PT SE**
 Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
 • Defoor, Tony
 8580 Avelgem (BE)
 • Hugelier, Johan
 8530 Harelbeke (BE)
 • Wastijn, Koen
 8540 Deerlijk (BE)

(30) Priority: **03.11.1999 BE 9900713**

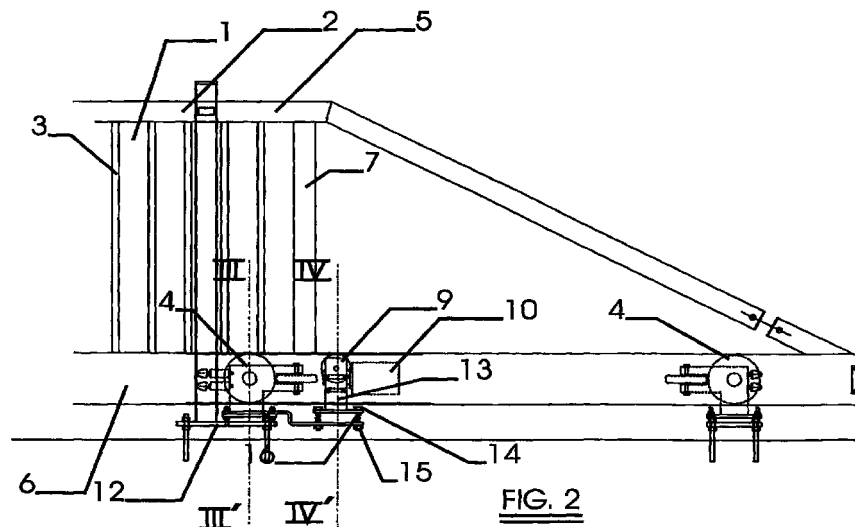
(74) Representative:
**Demeester, Gabriel et al
 N.V. Bekaert S.A.
 Bekaertstraat 2
 8550 Zwevegem (BE)**

(71) Applicant: **N.V. BEKAERT S.A.
 8550 Zwevegem (BE)**

(54) **Cantilevered sliding gate**

(57) The invention relates to a cantilevered sliding gate comprising a frame that has at least an upper and a lower guide beam, the latter representing a practically U-shaped cross-section and provided with two sets of guide wheels and one set of drive rolls with corresponding drive engine, whereby the set of drive rolls is

mounted on a supporting plate and whereby the supporting plate is provided with pressure devices to continuously keep the rolls in contact with the upper flange of the lower guide beam.



EP 1 098 059 A1

Description

[0001] The invention relates to a cantilevered sliding gate comprising a frame having at least an upper and a lower guide beam, the latter representing a practically U-shaped cross-section and provided with two sets of guide wheels and one set of drive rolls with corresponding drive engine.

[0002] Such a cantilevered sliding gate is practically known from the German Gbm 8906344.9.

[0003] A great advantage of such a sliding guide lies within the fact that the guide wheels, the drive rolls and the drive engine are entirely incorporated in the practically completely closed lower guide beam of the gate.

[0004] In a sliding gate according to the German Gbm 89.06344.9 it is amongst others possible to provide each of the guide wheels with a fixed toothed wheel and a drive chain concurring with both toothed wheels, allowing to open and to close the gate. In that case, the drive function and the support or guide function of the sliding gate coincide or in other words the drive rolls and the guide or support wheels of the gate are the same.

[0005] When opening and closing the gate completely, it will make a swivelling movement within its own plane around the guide wheels that are placed at a certain distance from each other. That implies that when the gate is completely closed, the first set of guide wheels touches the upper flange of the guide beam and that the second set of guide wheels touches the lower flange of the guide beam ; whereas when the gate is completely opened, the first set of guide wheels touches the lower flange of the guide beam and the second set of guide wheels touches the upper flange of the guide beam. This means that, just before, during the after the swivelling movement of the gate, the contact between the guide wheels and the flanges of the lower guide beam is minimal or substantially equal to zero.

[0006] When the drive function and the support function of the cantilevered sliding gate coincide, this can — in certain positions of the gate — result in serious problems to move the gate after a standstill as the contact of the guide wheels or the drive rolls with the flanges of the guide beam, as explained above, might be insufficient to have the drive rolls exert the necessary friction or gripping force on the flanges.

[0007] According to the German Gbm 89.06344.9 it is also possible to separate the drive function and the support function of a cantilevered sliding gate. It is known to install a separate drive mechanism with a friction wheel between the guide wheels, in which case the friction wheel or the drive roll concurs with a flange of the lower guide beam.

[0008] Nevertheless, it has been found that the surface of the drive roll used to that end is subject to wear and that the axle of the roll is exposed to high forces. As a result of the wear of the surface, the roll loses the necessary friction or gripper force on the lower guide beam

to be able to move the gate from a standstill.

[0009] Therefore it is necessary to provide the surface of the roll with an extremely wear-resistant upper layer, offering also sufficient friction resistance to have an excellent gripper force between the drive roll and the flanges of the guide beam. This requires a supplementary and expensive treatment during the manufacturing of the rolls. Moreover, the operational reliability of such specially treated rolls is still insufficient as even the slightest wear of a roll already results in a loss of the indispensable gripper force between the roll and the guide beam.

[0010] The object of the invention is to avoid the above-mentioned disadvantages.

[0011] Therefore, in the case of a cantilevered sliding gate of the aforementioned type, the invention proposes that the drive rolls are mounted on a supporting plate and that the supporting plate is provided with pressure devices to continuously keep the rolls pressed against the upper flange of the lower guide beam.

[0012] Preferably, the pressure devices consist of pressure springs installed between the supporting plate and a bottom plate.

[0013] The invention will be described in detail in the following description by means of the accompanying drawing, whereby :

Figure 1 represents the frontal view of a cantilevered sliding gate according to the invention ;

Figure 2 represents a frontal view of a part of a cantilevered sliding gate according to the invention, in which two sets of guide wheels and a set of drive rolls with drive engine are incorporated in the bottom U-shaped guide beam of the gate ;

Figure 3 represents a cross-section according to line III — III' in figure 2 of the U-shaped guide beam with a set of guide wheels with the corresponding vertical support and horizontal bottom plate ;

Figure 4 represents a cross-section according to line IV — IV' in figure 2 of the U-shaped guide beam with a set of drive rolls with supporting plate with pressure springs ;

Figure 5 represents a detailed frontal view of one set of guide wheels, the drive rolls with drive engine and the corresponding supporting plate with pressure springs.

[0014] Figure 1 shows a frontal view of the cantilevered sliding gate 1 according to the invention. The sliding gate 1 consists of a frame 2 with railings 3 placed at regular intervals and the necessary drive and guide wheels 4. The frame 2 consists of at least one lower 5 and one upper 6 guide beam and two upright posts 7. The lower guide beam 6 shows a practically U-shaped cross-section or in other words in the bottom side of the

lower guide beam 6 there is a longitudinal groove 8. The other figures use the same reference digits as figure 1 to indicate the same parts of the gate 1.

[0015] Figure 2 shows a detailed view of the two sets of guide wheels 4, placed at a certain distance from each other and a separated set of drive rolls 9 with corresponding drive engine 10. The two sets of guide wheels 4 in the lower guide beam 6, as well as the supporting wheels concurring with the upper guide beam 5 thus provide the supporting function of the cantilevered gate 1 ; whereas the set of drive rolls 9 with the corresponding engine 10 provide for the drive function of the gate 1. The drive function and the supporting function of the sliding gate 1 arranged according to the invention are separated from one another.

[0016] Figure 3 shows a cross-section according to line III — III' in figure 2 of a set of guide wheels 4 in the bottom guide beam 6 with longitudinal groove 8. Each set of guide wheels 4 consists of two wheels 4, installed at regular intervals of one another at both sides of the longitudinal groove 8 between the upper and the lower flange of the guide beam 6. The set of guide wheels 4 is mounted on a vertical support 11 that rests on a horizontal bottom plate 12.

[0017] Figure 4 represents a cross-section according to line IV — IV' in figure 2 of the set of drive rolls 9 with the corresponding drive engine 10. The set of drive rolls 9 consists of two rolls 9, put at a distance of one another at both sides of the longitudinal groove 8 against the upper flange of the guide beam 6. The set of drive rolls 9 and the corresponding drive engine 10 are installed on a vertical support 13 that rests on a horizontal supporting plate 14. It is recommended to install a reducer between the axle of the drive rolls 9 and the axle of the drive engine 10.

[0018] According to the invention, there are four pressure springs 16 between the horizontal supporting plate 14 and the corresponding bottom plate 15. These springs 16 are put under pressure and guarantee that the drive rolls 9 are firmly pressed against the upper flange of the bottom guide beam 6. It is also possible to replace the pressure springs 16 between the supporting plate 14 and the corresponding bottom plate 15 by a rubber or synthetic block having the necessary spring qualities. The rubber or synthetic block that is put under pressure thus forms a pressure device 16 that continuously keeps the drive rolls 9 pressed against the upper flange of the guide beam 6. The pressure devices 16 between the supporting plate 14 and the corresponding bottom plate 15 guarantee the gripper function of the rolls 9 on the upper flange of the guide beam 6 in all possible positions of the gate.

[0019] Figure 5 shows a detailed frontal view of the possible connection between the bottom plate 15 of the drive rolls 9 and the bottom plate 12 of the nearest set of guide wheels 4. The extended bottom plate 15 and the bottom plate 12 are firmly connected with the bottom.

Claims

1. Cantilevered sliding gate comprising a frame (2) having at least an upper (5) and a lower (6) guide beam, the latter representing a practically U-shaped cross-section and provided with two sets of guide wheels (4) and one set of drive rolls (9) with corresponding drive engine (10), characterised in that the drive rolls (9) are mounted on a supporting plate (14) and that the supporting plate (14) is provided with pressure devices (16) to continuously keep the rolls (9) pressed against the upper flange of the lower guide beam (6).
2. Cantilevered sliding gate according to claim 1, characterised in that the pressure devices (16) consist of pressure springs (16) installed between the supporting plate (14) and the bottom plate (15).

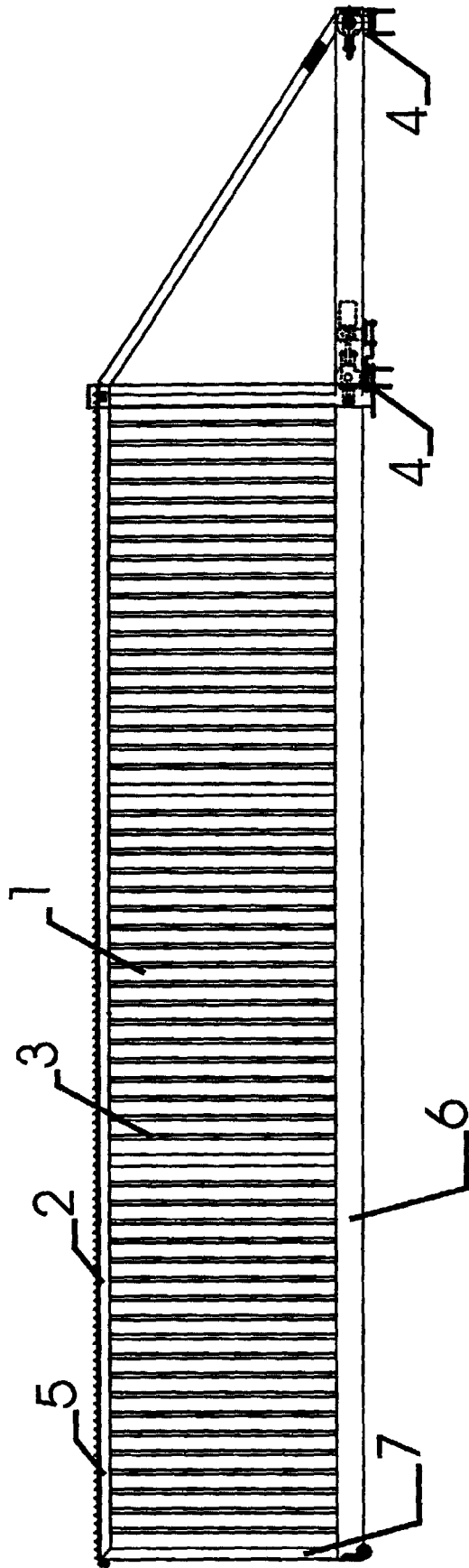
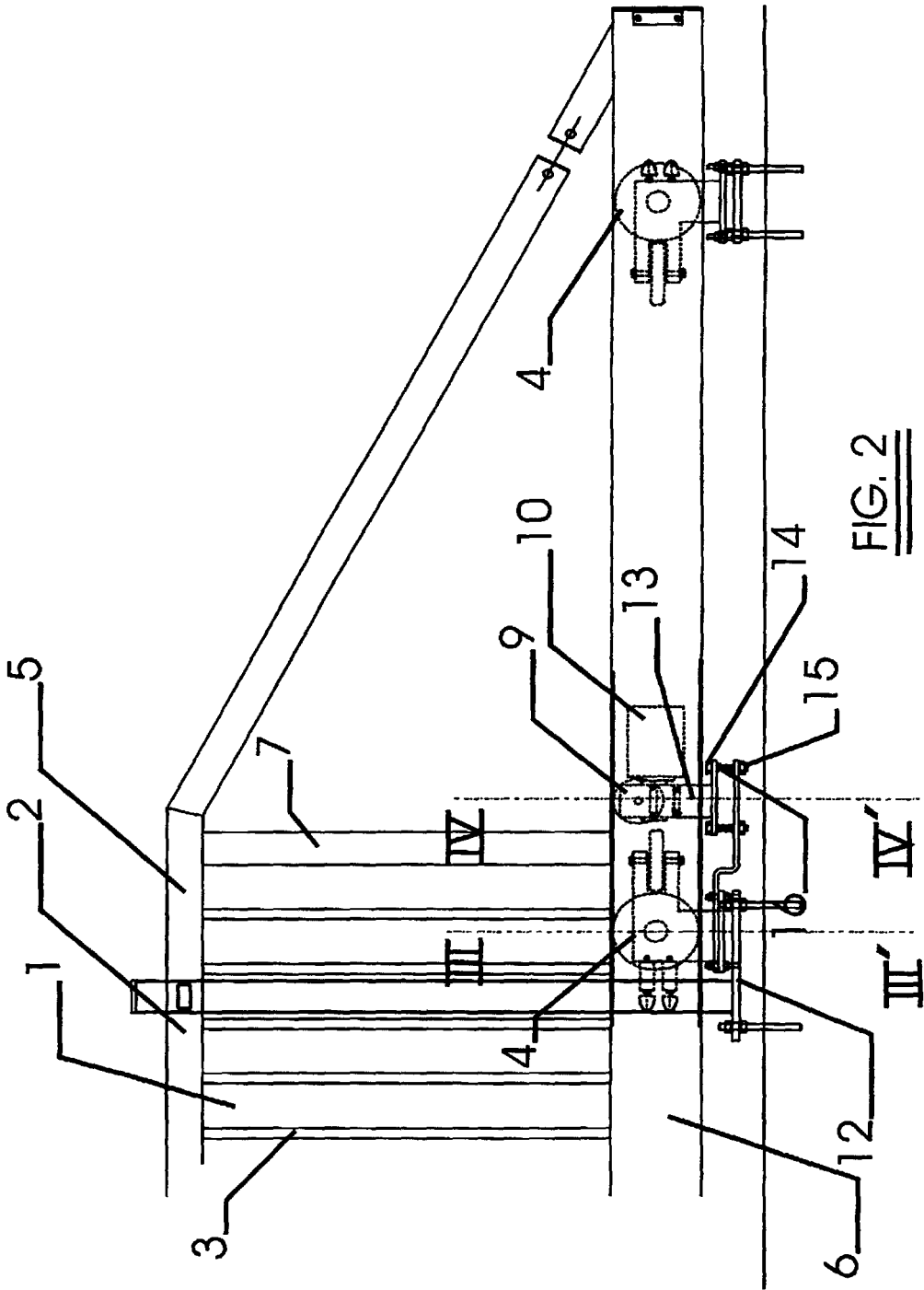


FIG. 1



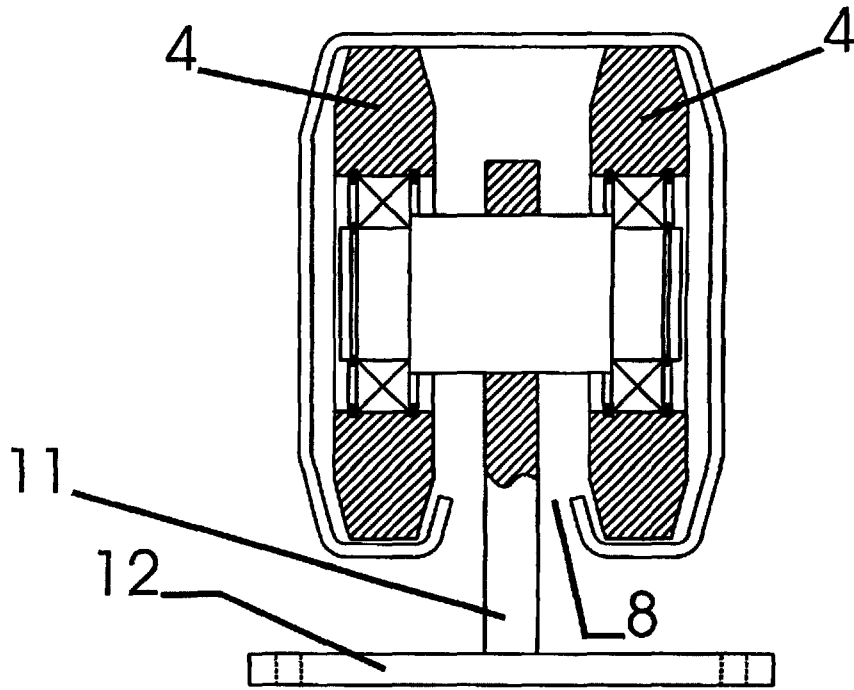


FIG. 3

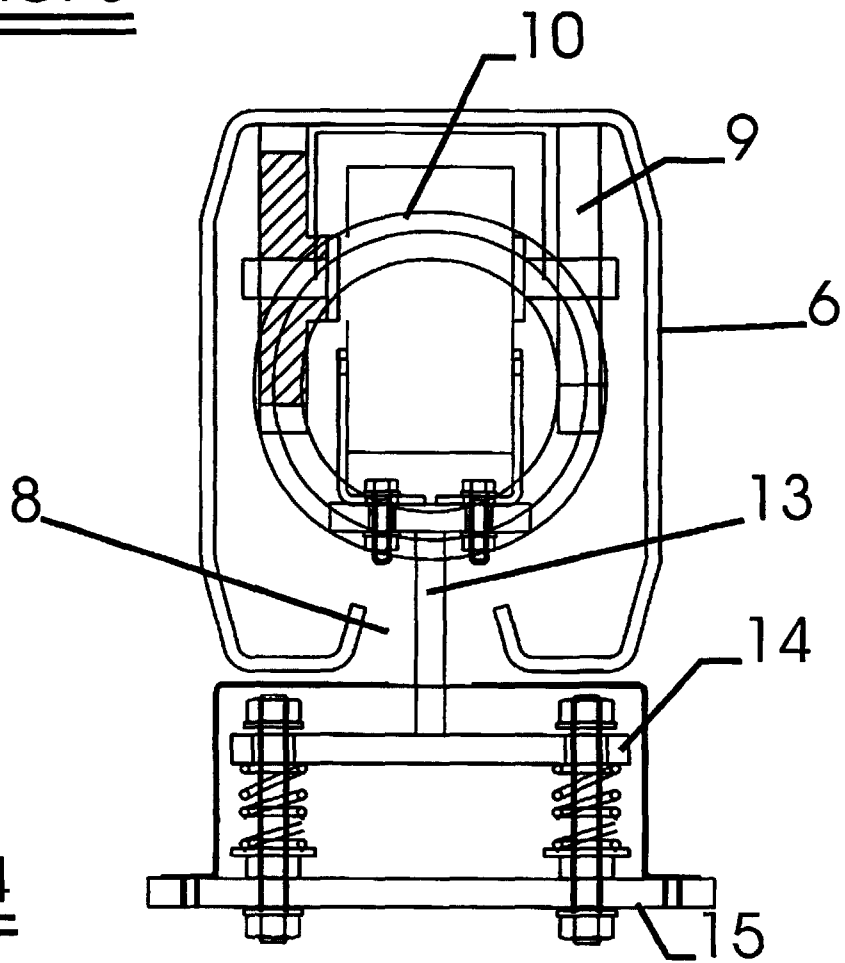


FIG. 4

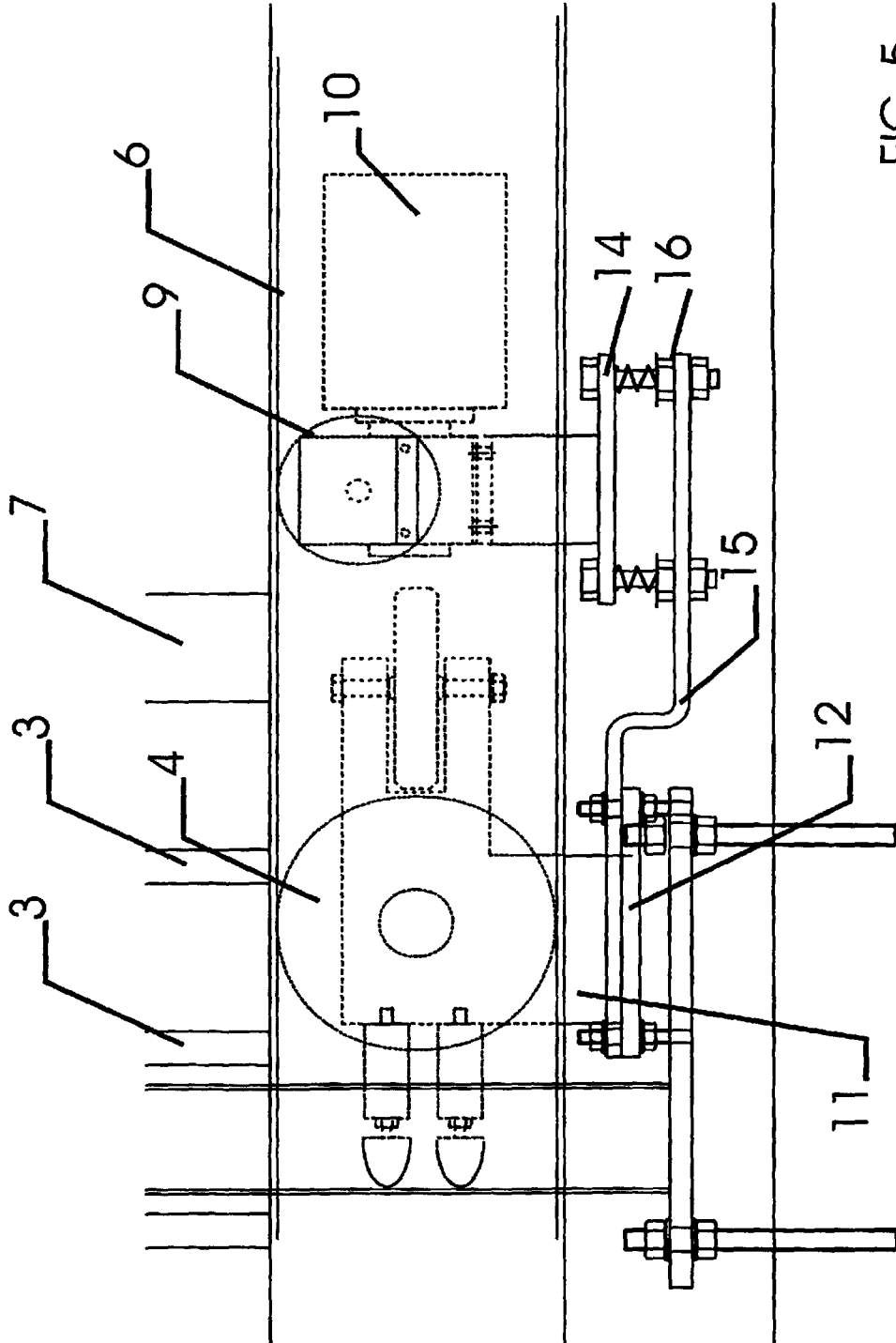


FIG. 5



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 20 3759

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	DE 197 44 149 A (WALCHER ELEKTROTECHNIK GMBH) 8 April 1999 (1999-04-08) * column 2, line 19 - column 3, line 12; figures *	1,2	E05F15/14 E06B11/04
Y	DE 94 18 079 U (BERLEMANN KLAUS) 21 March 1996 (1996-03-21) * page 12, paragraph 2 - paragraph 4; figures *	1,2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E05F E06B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 January 2001	Examiner Van Kessel, J
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.02 (F04-C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 20 3759

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-01-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19744149 A	08-04-1999	NONE	
DE 9418079 U	21-03-1996	AT 189500 T	15-02-2000
		DE 59507732 D	09-03-2000
		DK 711898 T	24-07-2000
		EP 0711898 A	15-05-1996

EPO FORM P0489

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82